CUMULATIVE AUTHOR INDEX
Journal of Medical Entomology
Volume 31, 1994

A

Abbassy, M. M., 202
Abebe, M., 908
Abella, J. A., 45
Abou-Fannah, S.S.M., 168
Adam, F., 623, 934
Aeschlimann, A., 763
Allaway, D., 645
Amerasinghe, F. P., 516
Amoudi, M. A., 168
Anderson, J. R., 159
Ansari, M. A., 505
Appel, A. G., 127, 265
Apperson, C. S., 586
Aussel, J.-P., 99
Azad, A. F., 681

B

Baldridge, R. S., 770
Banks, C. W., 915
Barnard, D. R., 571
Barré, N., 490
Bay, D. E., 732
Beaman, J. R., 287
Beaudo, D. C., 524
Beier, J. C., 445, 561, 767
Beier, M. S., 561
Bellis, G. A., 382
Benson, E. P., 127
Benton, A. H., 813
Bertsch, W., 833
Biggs, H., 333
Blackwell, A., 302
Borjas, G., 36
Botelho, J. R., 754
Boyer, J. E., 631
Braack, L.E.O., 333
Braverman, Y., 838
Briegel, H., 618
Brillhart, D. B., 500
Brogdon, W. G., 700
Brown, R. N., 417
Brust, R. A., 738
Budowle, B., 686
Burg, J. G., 658, 868
Burger, L. B., 511
Burnham, K. D., 770

C

Caccamise, D. F., 711
Calvete, C., 887
Campbell, S. R., 152, 178, 875
Cariaso, B., 45
Carroll, J. F., 291
Castellá, J., 534
Chambers, G. M., 554
Chan, A.S.T., 400
Chan, T. C., 691
Chen, C., 425
Chen, C.-C., 923
Chen, S.-C., 923
Chiba, Y., 49
Chirico, J., 240
Chomsky, M. S., 206
Choochote, W., 931
Cilek, J. E., 760
Clark, D. D., 152, 875
Clarke, F. C., 511
Clayton, D. H., 649
Coetzee, M., 333
Colbo, M. H., 566
Coleman, R. E., 17
Comer, J. A., 850
Corn, J. L., 57, 490, 850
Cornel, A., 333
Craig, Jr., G. B., 192, 278, 855
Crans, W. J., 711
Crawford, C. L., 586
Creekmore, L. H., 67, 72
Creekmore, T. E., 57
Crewe, R. M., 30
Cupp, E. W., 908
Cupp, M. S., 908
Cush, M., 36

D

Daniels, E., 571
Dasch, G. A., 691
Davidson, W. R., 67, 72
Davis, J. R., 217, 561
Day, J. F., 611, 813
De Leon, A.A.P., 898
DeWitt, J., 524
Debboun, M., 17
Delalbre, A., 231
Desch, Jr., C. E., 529
DiMotta, C., 152
Diab, F. M., 168
Digoutte, J.-P., 623, 934
Dotson, E. M., 479
Dryden, M. W., 272, 631
Duffy, D. C., 152, 178, 875
Duhrkopf, R. E., 770
Duncan, F. D., 30
Durden, L. A., 148, 915

E

Eamsila, C., 225
Edman, J. D., 611
Endris, R. G., 373
Estrada-Peña, A., 534

F

Failloux, A.-B., 639
Fernandez, E., 36
Fernandez-Salas, I., 340, 663
Fielden, L. J., 30, 511
Flanagan, M., 382
Focks, D. A., 278
Foil, L. D., 729
Ford, P. S., 435
Fox, A. S., 738
Fox, L. B., 500
Frances, S. P., 628
Fryauff, D. J., 23
Fujita, H., 183, 474

G

Galloway, T. D., 105
Garris, G. I., 490
Gericke, A., 333
Gern, L., 763
Gibson, D. S., 382

CUMULATIVE AUTHOR INDEX
Journal of Medical Entomology
Volume 31, 1994

A

Abbassy, M. M., 202
Abebe, M., 908
Abella, J. A., 45
Abou-Fannah, S.S.M., 168
Adam, F., 623, 934
Aeschlimann, A., 763
Allaway, D., 645
Amerasinghe, F. P., 516
Amoudi, M. A., 168
Anderson, J. R., 159
Ansari, M. A., 505
Appel, A. G., 127, 265
Apperson, C. S., 586
Aussel, J.-P., 99
Azad, A. F., 681

B

Baldridge, R. S., 770
Banks, C. W., 915
Barnard, D. R., 571
Barré, N., 490
Bay, D. E., 732
Beaman, J. R., 287
Beaudo, D. C., 524
Beier, J. C., 445, 561, 767
Beier, M. S., 561
Bellis, G. A., 382
Benson, E. P., 127
Benton, A. H., 813
Bertsch, W., 833
Biggs, H., 333
Blackwell, A., 302
Borjas, G., 36
Botelho, J. R., 754
Boyer, J. E., 631
Braack, L.E.O., 333
Braverman, Y., 838
Briegel, H., 618
Brillhart, D. B., 500
Brogdon, W. G., 700
Brown, R. N., 417
Brust, R. A., 738
Budowle, B., 686
Burg, J. G., 658, 868
Burger, L. B., 511
Burnham, K. D., 770

C

Caccamise, D. F., 711
Calvete, C., 887
Campbell, S. R., 152, 178, 875
Cariaso, B., 45
Carroll, J. F., 291
Castellá, J., 534
Chambers, G. M., 554
Chan, A.S.T., 400
Chan, T. C., 691
Chen, C., 425
Chen, C.-C., 923
Chen, S.-C., 923
Chiba, Y., 49
Chirico, J., 240
Chomsky, M. S., 206
Choochote, W., 931
Cilek, J. E., 760
Clark, D. D., 152, 875
Clarke, F. C., 511
Clayton, D. H., 649
Coetzee, M., 333
Colbo, M. H., 566
Coleman, R. E., 17
Comer, J. A., 850
Corn, J. L., 57, 490, 850
Cornel, A., 333
Craig, Jr., G. B., 192, 278, 855
Crans, W. J., 711
Crawford, C. L., 586
Creekmore, L. H., 67, 72
Creekmore, T. E., 57
Crewe, R. M., 30
Cupp, E. W., 908
Cupp, M. S., 908
Cush, M., 36

D

Daniels, E., 571
Dasch, G. A., 691
Davidson, W. R., 67, 72
Davis, J. R., 217, 561
Day, J. F., 611, 813
De Leon, A.A.P., 898
DeWitt, J., 524
Debboun, M., 17
Delalbre, A., 231
Desch, Jr., C. E., 529
DiMotta, C., 152
Diab, F. M., 168
Digoutte, J.-P., 623, 934
Dotson, E. M., 479
Dryden, M. W., 272, 631
Duffy, D. C., 152, 178, 875
Duhrkopf, R. E., 770
Duncan, F. D., 30
Durden, L. A., 148, 915

E

Eamsila, C., 225
Edman, J. D., 611
Endris, R. G., 373
Estrada-Peña, A., 534

F

Failloux, A.-B., 639
Fernandez, E., 36
Fernandez-Salas, I., 340, 663
Fielden, L. J., 30, 511
Flanagan, M., 382
Focks, D. A., 278
Foil, L. D., 729
Ford, P. S., 435
Fox, A. S., 738
Fox, L. B., 500
Frances, S. P., 628
Fryauff, D. J., 23
Fujita, H., 183, 474

G

Galloway, T. D., 105
Garris, G. I., 490
Gericke, A., 333
Gern, L., 763
Gibson, D. S., 382

Gibson, G., 114
Gomes, A. F., 754
Greenberg, B., 171, 757
Gurney, S., 152, 875
Guzman, H., 890

H

Haile, D. G., 571
Hanson, S. M., 192
Hardy, J. L., 323
Hawley, W. A., 278
Hellenthal, R. A., 450
Herrero, M. V., 912
Hervy, J.-P., 623, 934
Hess, W. R., 373
Higgins, J. A., 681
Ho, T. M., 691
Hori, E., 212
Hribar, L. J., 729
Hunt, R. H., 333
Hunter, F. F., 566
Hurley, R. J., 529
Hutchings, R.S.G., 186

I

Iida, H., 474
Indrajith, N. G., 516
Ishiguro, F., 474
Iwaki, M., 931

J

Jaenson, T.G.T., 240, 880
Jaworski, J., 828
Jensen, T., 607
Jimenez, A. E., 912
Johnson, S. J., 382
Jones, D. N., 915
Jones, L. D., 1
Jordan, R. A., 206

K

Kamiya, M., 45
Kanda, T., 844
Kaufman, W. R., 1
Kavanaugh, D. M., 57, 850
Kawamori, F., 844
Kawamura, Jr., A., 212
Kay, B. H., 645
Keirans, J. E., 132
Kelly, D. J., 225, 691
Kemme, J. A., 645
Kidwell, M. G., 10
Kim, Y., 671
King, D. R., 132
Klein, T. A., 17
Klowden, M. J., 554, 618
Knapp, F. W., 760, 868
Koehler, P. G., 704
Konishi, E., 394
Kovac, B., 828
Krafsur, E. S., 62, 671
Krell, F.-T., 927
Kumada, N., 844
Kumar, S., 388
Kurtti, T. J., 425

L

Labuda, M., 1
Lane, R. S., 417
Lassiter, M. T., 586
Lehmann, T., 257
Leprince, D. J., 729
Lewis, J. H., 82, 348, 795
Lewis, R. E., 82, 348, 795
Linardi, P. M., 754
Linda, S. B., 278
Linley, J. R., 99, 813, 855, 838
Linthicum, K. J., 306
Lloyd, J. E., 898
Logan, T. M., 306
Lopes, C.M.L., 754
Lord, W. D., 686
Lucientes, J., 887
Lundqvist, L., 240

M

Mackie, A. J., 511
Magnon, G. J., 17
Mahara, F., 183
Mansour, M. Y., 62
Manuel, M., 45
Marinucci, M., 496
Marten, G. G., 36
Matsumoto, A., 49
Maupin, G. O., 319
Maxwell, C. S., 17
McAllister, J. C., 369
McCreadie, J. W., 566
McLean, R. G., 524
McNelly, J. R., 711
Mecham, J. O., 903
Meddis, M. A., 206
Meinking, T. L., 686
Mejlon, H., 240
Mellor, P. S., 302
Mendis, C., 767
Mercer, D. R., 159
Milby, M. M., 323
Miller, J. E., 114
Mills, Jr., G. D., 828
Misumi, H., 212
Mitchell, C. J., 123
Miyamoto, K., 467
Mondo, M., 623, 934
Monlun, E., 623
Mordue, W., 302
Morel, P. C., 534
Mount, G. A., 571
Mullens, B. A., 175
Munderloh, U. G., 425
Murata, M., 212
Mutchmor, J. A., 62

N

Nakao, M., 467
Nasci, R. S., 123, 594
Neely, G. W., 287
Noden, B. H., 445, 767
Novak, M. G., 600
Nunamaker, R. A., 903
Nussenzveig, R. H., 747
Nuttall, P. A., 1

O

Oda, T., 49
Oliver, Jr., J. H., 479
Olsen, B., 240
Osacar, J. J., 887
Osman, M., 202

P

Pasteur, N., 231, 639
Patterson, R. S., 704
Peavey, C. A., 417
Pereira, R., 912
Perello, R., 875

Perich, M. J., 833
Pickens, L. G., 828
Piesman, J., 206, 319, 417
Pitcairn, M. J., 545
Polkinghorne, I. G., 382
Potts, W.J.E., 291
Price, R. D., 450, 649
Pumpuni, C. B., 278, 561
Pung, O. J., 915

R

Ramberg, F. B., 908
Rawlings, J. A., 297
Raymond, M., 231, 496, 693
Rechav, Y., 30, 511
Reeves, W. C., 323
Reichardt, T. R., 105
Reid, J. W., 36
Reisen, W. K., 323
Rejmankova, E., 545
Ren, H. L., 479
Replogle, J., 686
Ribeiro, H., 887
Ribeiro, J.M.C., 10, 747
Richards, A. L., 17
Rioux, J. A., 231
Ritchie, S. A., 645, 920
Rivet, Y., 231
Roberts, D., 388
Roberts, D. R., 340, 663
Robinson, J. L., 57
Rodriguez, L. L., 912
Rodríguez, M. H., 340, 400, 663
Rodríguez, M.D.C., 400, 663
Roe, R. M., 586
Rongsriyam, Y., 931
Rosales, A. L., 671
Rowley, W. A., 600
Rust, M. K., 486

S

Sacci, Jr., J. B., 681
Schmidtmann, E. T., 291
Schreck, C. E., 23
Schriefer, M. E., 681
Schulze, T. L., 206
Scott, T. W., 611
Severini, C., 496
Sharma, V. P., 505
Sharrad, R. D., 132
Shaw, D. C., 206
Shinkawa, Y., 49
Shoukry, M. A., 23
Siefken, D. A., 67, 72
Silapanuntakul, S., 868
Silverman, J., 265
Simon, N., 875
Singh, D., 757
Siriprasert, V., 931
Skeeles, J. K., 369
Smith, T. W., 524
Smith, V., 272, 631
Snyder, B. D., 490
Stafford III, K. C., 310, 732
Stallknecht, D. E., 850
Steelman, C. D., 369
Stein, K. J., 202
Strickman, D., 225
Strong, C. A., 704
Strydom, W. J., 511

T

Tabachnick, W. J., 898
Takada, N., 183, 474
Takahashi, M., 212
Takaoka, H., 404
Takeda, S.-I., 49
Takken, W., 775
Tälleklint, L., 240, 880
Tanaka, H., 212
Tanskul, P., 225
Taplin, D., 686
Taylor, J. P., 681
Taylor, R. C., 206
Teltow, G. J., 297
Tesh, R. B., 890
Tomioka, K., 49
Torres, J. A., 400
Tortorella, G., 747
Traore-Lamizana, M., 623, 934
Tredway, K. E., 833
Trpis, M., 217, 442
Tsuboi, Y., 183
Turell, M. J., 148, 287

U

Uchikawa, K., 315, 844
Uehara, K., 394
Ung, A., 639
Upton, S. J., 500

V

Van Essen, P.H.A., 645
Van Heusden, M. C., 435
Vasvary, L. M., 206
Vaughan, J. A., 445
Velten, R. K., 175
Villarreal, C., 400
Vodopich, D. S., 770

W

Walker, E. D., 524
Walters, L. L., 890
Washino, R. K., 545, 607
Wasserman, S. S., 217
Wells, C., 833
Wells, J. D., 171
Wild, M., 927
Willemse, L.P.M., 775
Willis, F. S., 594
Wilson, L. T., 545
Wirtz, R. A., 17, 663

Y

Yano, Y., 183, 474

Z

Zeller, H. G., 623, 934
Zhang, M.-Y., 315
Zhioua, E., 763
Zhu, X. X., 479

CUMULATIVE SUBJECT INDEX
Journal of Medical Entomology
Volume 31, 1994

abundance, *Amblyomma americanum*, 67
  population dynamics, 67
Acaricides, control, 206
  dose-mortality, 319
  Ixodes scapularis, 206, 319
acetylcholinesterase,
  esterases, 231
  insecticide resistance, 231
adenosine triphosphate,
Culicoides impunctatus, 302
  membrane feeding, 302
adulticide, larvicide, 833
  Tagetes minuta, 833
Aedes, *Anopheles*, 618
  behavior, 700
  Dengue 2, 623
  flight tone, 700
  multiple feeding, 618
  oviposition, 920
  Senegal, 623
  surveillance, 920
Aedes aegypti, *Aedes polynesiensis*, 639
  biological control, 36
  blood feeding, 611
  body size, 123
  Copepoda, 36
  Culex pipiens, 639
  microfilariae, 923
  Ross River virus, 123
  salivarectomy, 923
  sugar feeding, 611
Aedes albopictus, autogeny, 554
  body size, 594
  cold hardiness, 192
  diapause, 192
  eastern equine encephalitisvirus, 287
  egg predation, 770
  parity, 594
  reproduction, 554
  Solenopsis invicta, 770
  vector competence, 287
Aedes mediovittatus, *Brugia* spp., 442
  susceptibility, 442
Aedes melanimon, *Aedes vexans*, 607
  recaptures, 607
Aedes polynesiensis, *Aedes aegypti*, 639
  Culex pipiens, 639
Aedes triseriatus, blood feeding, 600
  serotonin, 600
Aedes vexans, *Aedes melanimon*, 607
  recaptures, 607
African swine fever virus,
  Ornithodoros (P.) marocanus, 373
  virus transmission, 373
allergy, enzyme immunoassay, 394
  house dust mites, 394
Alphitobius diaperinus,
  chicken, 369
  Salmonella transmission, 369
Amblyomma americanum,
  abundance, 67
  Borrelia, 297
  computer simulation, 571
  pest management, 571
  population dynamics, 67
  prescribed burning, 72
  Texas, 297
  tick control, 72
Amblyomma hebraeum,
  respiration, 30
  tick, 30
Amblyomma variegatum,
  Boophilus microplus, 57
  cuticular hydrocarbons, 534
  genetic distance, 534
  Herpestes auropunctatus, 490
  Ornithodoros puertoricensis, 57
  tick eradication, 490
American dog tick, atomic absorption spectrometry, 658
  elemental marking, 658
amplification, insecticide resistant genes, 496
  mosquitoes, 496
Anopheles, *Aedes*, 618
  Culex, 435
  exflagellation, 767
  lipid, 435
  multiple feeding, 618
  nutrition, 561
  Plasmodium, 561
  Plasmodium falciparum, 767
Anopheles albimanus, *Plasmodium vivax*, 400
  susceptibility, 400
Anopheles arabiensis, biting pattern, 333
  flight behavior, 333
Anopheles freeborni, *Culex tarsalis*, 545
  spatial pattern, 545
Anopheles gambiae, blood meal, 445
  Culex quinquefasciatus, 114
  insecticide-impregnated bed nets, 114
  Plasmodium falciparum, 445
Anopheles pseudopunctipennis,
  gonotrophic cycle, 340
  survivorship, 340
anoxia, gamma radiation, 62
  Musca autumnalis, 62
anticoagulant, black fly, 908
  Simulium, 908
arbovirus, arbovirus transmission, 1
  global warming, 323
  Hyalomma truncatum, 306
  Ixodidae, 306
  mosquito, 323
  ticks, 1

Argas, fetal bovine serum, 202
skin, 202
Armenian hamster, ectoparasite, 529
hair follicle mite, 529
atomic absorption spectrometry, American dog tick, 658
elemental marking, 658
attachment stimulus, *Hyalomma dromedarii*, 23
permethrin, 23
attractant, *Culicoides*, 645
kairomone, 729
olfaction, 729
surveillance, 645
Australia, Ixodidae, 132
lizards, 132
autogeny, *Aedes albopictus*, 554
reproduction, 554
aves, *Furnaricola*, 649
neotropical, 649
Bagaza virus, Culicidae, 934
West Nile virus, 934
baits, flies, 828
traps, 828
bat fleas, distribution, 348
host preference, 348
behavior, *Aedes*, 700
flight tone, 700
Glossina, 775
host location, 775
biological control, *Aedes aegypti*, 36
Copepoda, 36
bird, *Culiseta melanura*, 711
eastern equine encephalomyelitis, 711
biting behavior, *Onchocerca volvulus*, 217
Simulium yahense, 217
biting pattern, *Anopheles arabiensis*, 333
flight behavior, 333
black fly, anticoagulant, 908
Simulium, 908
Blattella germanica, development, 704
entomopathogenic nematodes, 127
mass rearing, 704
transoothecal transmission, 127
blood feeding, *Aedes aegypti*, 611
Aedes triseriatus, 600
Phlebotomus, 890
sand flies, 890
serotonin, 600
sugar feeding, 611
blood meal, *Anopheles gambiae*, 445
Plasmodium falciparum, 445
blow flies, forensic, 757
forensic entomology, 171
pupae, 757
Solenopsis invicta, 171
bluetongue virus, *Culicoides*, 382
Culicoides variipennis sonorensis, 903
infection rates, 903
vector, 382
body size, *Aedes aegypti*, 123
Aedes albopictus, 594
parity, 594
Ross River virus, 123
Boophilus microplus, *Amblyomma variegatum*, 57
Ornithodoros puertoricensis, 57
Borrelia, *Amblyomma americanum*, 297
Texas, 297
Borrelia burgdorferi, *Ixodes ricinus*, 763
Ixodes scapularis, 524
Michigan, 524
transovarial transmission, 763
bovine *Onchocerca*, Simuliidae, 404
transmission, 404
breeding sites, population dynamics, 186
Toxorhynchites h. haemorrhoidalis, 186
Brugia spp., *Aedes mediovittatus*, 442
susceptibility, 442
cat flea, counting techniques, 631
Ctenocephalides felis, 631
mark-and-recapture, 486
movement, 486
Ceratopogonidae, fecundity, 838
gravid percentage, 838
chicken, *Alphitobius diaperinus*, 369
Salmonella transmission, 369
circadian flight, *Culex pipiens* complex, 49
free-running period, 49
cocoon, *Ctenocephalides felis*, 272
pupae, 272
cold hardiness, *Aedes albopictus*, 192
diapause, 192
cold shock, diapause, 671
rapid cold hardening, 671
commensal rodents, Ectoparasites, 754
flea indices, 754
computer simulation, *Amblyomma americanum*, 571
pest management, 571
control, Acaricides, 206
Ixodes scapularis, 206
Copepoda, *Aedes aegypti*, 36
biological control, 36
Costa Rica, *Lutzomyia*, 912
vesicular stomatitis virus, 912
counting techniques, cat flea, 631
Ctenocephalides felis, 631

Ctenocephalides felis, cat flea, 631
cocoon, 272
counting techniques, 631
larval diets, 265
protein composition, 265
pupae, 272
Culex, *Anopheles*, 435
lipid, 435
Culex pipiens, *Aedes aegypti*, 639
Aedes polynesiensis, 639
repellents, 17
Saudi Arabia, 17
Culex pipiens complex, circadian flight, 49
free-running period, 49
Culex quinquefasciatus, *Anopheles gambiae*, 114
insecticide-impregnated bed nets, 114
JH epoxide hydrolase, 586
JH esterase, 586
Culex tarsalis, *Anopheles freeborni*, 545
dilatation, 738
parity, 738
spatial pattern, 545
Culicidae, Bagaza virus, 934
West Nile virus, 934
Culicoides spp., attractants, 645
bluetongue, 382
Leucocytozoon caulleryi, 45
Philippines, 45
surveillance, 645
vector, 382
Culicoides furens, feeding behavior, 99
larval food, 99
Culicoides impunctatus, adenosine triphosphate, 302
membrane feeding, 302
Culicoides variipennis, nematodes, 175
rearing, 175
salivary glands, 898
sexual dimorphism, 898
Culicoides variipennis sonorensis, bluetongue virus, 903
infection rates, 903
Culiseta melanura, bird, 711
eastern equine encephalomyelitis, 711
cuticular hydrocarbons, *Amblyomma variegatum*, 534
genetic distance, 534
cuticulogenesis, ecdysteroids, 479
tick, 479
deforestation, *Latrodectus*, 927
Liberia, 927
Dengue 2, *Aedes*, 623
Senegal, 623
Dermacentor occidentalis, *Ixodes pacificus*, 417
Lyme disease, 417
development, *Blattella germanica*, 704
mass rearing, 704
diapause, *Aedes albopictus*, 192
cold hardiness, 192
cold shock, 671
eggs, 278
rapid cold hardening, 671
statistical models, 278
dilatation, *Culex tarsalis*, 738
parity, 738
diluting bovine blood, horn fly, 868
silicone membrane, 868
distribution, bat fleas, 348
fleas, 82
host preference, 82, 348
DNA, lice, 686
polymerase chain reaction, 686
dose-mortality, Acaricides, 319
Ixodes scapularis, 319
eastern equine encephalomyelitis, bird, 711
Culiseta melanura, 711
eastern equine encephalitis virus, *Aedes albopictus*, 287
vector competence, 287
ecdysteroids, cuticulogenesis, 479
tick, 479
ectoparasite, Armenian hamster, 529
commensal rodents, 754
flea indices, 754
hair follicle mite, 529
opossums, 915
population, 257
raccoons, 915
reinfestation, 257
egg morphology, fine structure, 931
Mansonia, 931
egg predation, *Aedes albopictus*, 770
Solenopsis invicta, 770
eggs, diapause, 278
mosquitoes, 855
scanning electron microscopy, 813, 855
Siphonaptera, 813
statistical models, 278
elemental marking, American dog tick, 658
atomic absorption spectrometry, 658
entomopathogenic nematodes, *Blattella germanica*, 127
transoothecal transmission, 127
enzyme immunoassay, allergy, 394
house dust mites, 394
epidemiology, murine typhus, 681
opossum, 681
esterases, acetylcholinesterase, 231
insecticide resistance, 231
Eutrombicula hirsti, repellents, 628
Trombiculidae, 628
exflagellation, *Anopheles*,

767
Plasmodium falciparum, 767
face fly, gynandromorph, 760
Musca autumnalis, 760
fecundity, Ceratopogonidae, 838
gravid percentage, 838
feeding, hard ticks, 511
isotopes, 511
feeding behavior,
Culicoides furens, 99
larval food, 99
fetal bovine serum, *Argas*, 202
skin, 202
fine structure, egg morphology, 931
Mansonia, 931
flea indices, commensal rodents, 754
Ectoparasites, 754
fleas, distribution, 82
host preference, 82, 795
North America, 795
flies, baits, 828
traps, 828
flight behavior, *Anopheles arabiensis*, 333
biting pattern, 333
flight tone, *Aedes*, 700
behavior, 700
forensic entomology, blow flies, 171, 757
pupae, 757
Solenopsis invicta, 171
free-running period,
circadian flight, 49
Culex pipiens complex, 49
Furnaricola, aves, 649
neotropical, 649
G-banding chromosomes, *Ixodes scapularis*, 425
nucleolar organizing regions, 425
gamma radiation, anoxia, 62
Musca autumnalis, 62
genetic distance, *Amblyomma variegatum*, 534
cuticular hydrocarbons, 534
geographical information systems, *Ixodes scapularis*, 875
landscape ecology, 875
Geomydoecus, Mallphaga, 450
Thomomydoecus, 450
global warming, arbovirus, 323
mosquito, 323
Glossina, behavior, 775
host location, 775
gonotrophic cycle,
Anopheles pseudopunctipennis, 340
survivorship, 340
gravid percentage,
Ceratopogonidae, 838
fecundity, 838
gynandromorph, face fly, 760
Musca autumnalis, 760
hair follicle mite, Armenian hamster, 529
ectoparasite, 529
hard ticks, feeding, 511
isotopes, 511
hematophagy, hemostasis, 747
saliva, 747
hemostasis, hematophagy, 747 saliva, 747
Herpestes auropunctatus,
Amblyomma variegatum, 490
tick eradication, 490
horn fly, diluting bovine blood, 868
silicone membrane, 868
host location, behavior, 775
Glossina, 775
host preference, bat fleas, 348
distribution, 82, 348
fleas, 82, 795
North America, 795
hosts, Ixodidea, 240
Simuliidae, 566
sugar feeding, 566
Sweden, 240
house dust mites, allergy, 394
enzyme immunoassay, 394
Hyalomma dromedarii,
attachment stimulus, 23
permethrin, 23
Hyalomma truncatum,
arbovirus, 306
Ixodidae, 306
immature development,
parasarcophaga (Liopygia) ruficornis, 168
temperature, 168
infection rates, bluetongue virus, 903
Culicoides variipennis sonorensis, 903
insecticide resistance,
acetylcholinesterase, 231
esterases, 231
insecticide resistant genes,
amplification, 496
mosquitoes, 496
insecticide-impregnated bed nets, *Anopheles gambiae*, 114
Culex quinquefasciatus, 114
irrigation, mosquito breeding, 516
Sri Lanka, 516
isotopes, feeding, 511
hard ticks, 511
Ixodes ovatus, *Ixodes persulcatus*, 467
Lyme disease spirochetes, 467
Ixodes pacificus,
Dermacentor occidentalis, 417
Lyme disease, 417
Ixodes persulcatus, *Ixodes ovatus*, 467
Japan, 474
Lyme *Borrelia*, 474
Lyme disease spirochetes, 467
Ixodes ricinus, *Borrelia*

burgdorferi, 763
Lyme borreliosis, 880
reservoirs, 880
transovarial transmission, 763
Ixodes scapularis,
Acaricides, 206, 319
Borrelia burgdorferi, 524
control, 206
dose-mortality, 319
G-banding chromosomes, 425
geographical information systems, 875
landscape ecology, 152, 875
Lyme borreliosis, 152
Lyme disease, 178
Michigan, 524
nucleolar organizing regions, 425
relative humidity, 310
temperature, 178
ticks, 310
Ixodidae, arbovirus, 306
Australia, 132
hosts, 240
Hyalomma truncatum, 306
lizards, 132
Sweden, 240
Japan, *Ixodes persulcatus*, 474
Lyme *Borrelia*, 474
Japanese spotted fever, Rickettsia, 183
tick, 183
JH epoxide hydrolase, *Culex quinquefasciatus*, 586
JH esterase, 586
JH esterase, *Culex quinquefasciatus*, 586
JH epoxide hydrolase, 586
kairomone, attractant, 729
olfaction, 729
Kansas, mammals, 500
ticks, 500
landscape ecology, geographical information systems, 875
Ixodes scapularis, 152, 875
Lyme borreliosis, 152
Langat virus, *Ornithodoros sonrai*, 148
vector competency, 148
larval diets, *Ctenocephalides felis*, 265
protein composition, 265
larval food, *Culicoides furens*, 99
feeding behavior, 99
larvicide, adulticide, 833
Tagetes minuta, 833
Latrodectus, deforestation, 927
Liberia, 927
Leptotrombidium fletcheri, polymerase chain reaction, 691
Rickettsia tsutsugamushi, 691
Leptotrombidium pallidum, *Rickettsia tsutsugamushi*, 212
vertical transmission, 212
Leptotrombidium scutellare, seasonal abundance, 844
Tullgren funnel method, 844
Leucocytozoon caulleryi, *Culicoides* spp., 45
Philippines, 45
Liberia, deforestation, 927
Latrodectus, 927
lice, DNA, 686
polymerase chain reaction, 686
lipid, *Anopheles*, 435
Culex, 435
livestock, pasture, 291
risk tick attachment, 291
lizards, Australia, 132
Ixodidae, 132
Lutzomyia, Costa Rica, 912
vesicular stomatitis virus, 912
Lutzomyia shannoni, seasonal dynamics, 850
vesicular stomatitis virus, 850
Lyme *Borrelia*, *Ixodes persulcatus*, 474
Japan, 474
Lyme borreliosis, *Ixodes ricinus*, 880
Ixodes scapularis, 152
landscape ecology, 152
reservoirs, 880
Lyme disease, *Dermacentor occidentalis*, 417
Ixodes pacificus, 417
Ixodes scapularis, 178
temperature, 178
Lyme disease spirochetes, *Ixodes ovatus*, 467
Ixodes persulcatus, 467
Macrocheles muscaedomesticae, *Musca domestica*, 732
Taylor's power law, 732
Macronyssidae, *Nycteronyssus desmodus*, 315
taxonomy, 315
malaria, *Plasmodium vivax*, 663
vector biology, 663
Mallphaga, *Geomydoecus*, 450
Thomomydoecus, 450
mammals, Kansas, 500
ticks, 500
Mansonia, egg morphology, 931
fine structure, 931
mark-and-recapture, cat flea, 486
movement, 486
mass rearing, *Blattella germanica*, 704
development, 704
membrane feeding, adenosine triphosphate, 302
Culicoides impunctatus, 302
Michigan, *Borrelia burgdorferi*, 524
Ixodes scapularis, 524

microfilariae, *Aedes aegypti*, 923
salivarectomy, 923
mosquito, amplification, 496
arbovirus, 323
eggs, 855
global warming, 323
insecticide resistant genes, 496
neem oil, 505
repellent, 505
scanning electron microscopy, 855
mosquito breeding, irrigation, 516
Sri Lanka, 516
movement, cat flea, 486
mark-and-recapture, 486
multiple feeding, *Aedes*, 618
Anopheles, 618
murine typhus, epidemiology, 681
opossum, 681
Musca autumnalis, anoxia, 62
face fly, 760
gamma radiation, 62
gynandromorph, 760
Musca domestica, *Macrocheles muscaedomesticae*, 732
Taylor's power law, 732
neem oil, mosquitoes, 505
repellent, 505
nematodes, *Culicoides variipennis*, 175
rearing, 175
neotropical, aves, 649
Furnaricola, 649
new species, Siphonaptera, 887
Spain, 887
North America, fleas, 795
host preference, 795
nucleolar organizing regions, G-banding chromosomes, 425
Ixodes scapularis, 425
nutrition, *Anopheles*, 561
Plasmodium, 561
Nycteronyssus desmodus, Macronyssidae, 315
taxonomy, 315
olfaction, attractant, 729
kairomone, 729
Onchocerca volvulus, biting behavior, 217
Simulium yahense, 217
Opisocrostis bruneri, reproduction, 105
Spermophilus franklinii, 105
opossum, ectoparasites, 915
epidemiology, 681
murine typhus, 681
raccoons, 915
Ornithodoros (P.) marocanus, African swine fever virus, 373
virus transmission, 373
Ornithodoros puertoricensis, *Amblyomma variegatum*, 57
Boophilus microplus, 57
Ornithodoros sonrai, Langat virus, 148
vector competency, 148
oviposition, *Aedes*, 920
surveillance, 920
parasarcophaga (Liopygia) ruficornis, immature development, 168
temperature, 168
parasitism, tannin, 159
treehole mosquito, 159
parity, *Aedes albopictus*, 594
body size, 594
Culex tarsalis, 738
dilatation, 738
pasture, livestock, 291
risk tick attachment, 291
permethrin, attachment stimulus, 23
Hyalomma dromedarii, 23
pest management, *Amblyomma americanum*, 571
computer simulation, 571
Philippines, *Culicoides* spp., 45
Leucocytozoon caulleryi, 45
Phlebotomus, blood feeding, 890
sand flies, 890
Plasmodium, *Anopheles*, 561
nutrition, 561
Plasmodium falciparum, *Anopheles gambiae*, 445
Anopheles, 767
blood meal, 445
exflagellation, 767
Plasmodium vivax, *Anopheles albimanus*, 400
malaria, 663
susceptibility, 400
vector biology, 663
polymerase chain reaction, DNA, 686
Leptotrombidium fletcheri, 691
lice, 686
Rickettsia tsutsugamushi, 691
population, ectoparasite, 257
reinfestation, 257
population dynamics, abundance, 67
Amblyomma americanum, 67
breeding sites, 186
Toxorhynchites h. haemorrhoidalis, 186
population genetics, transposable element, 10
vector control, 10
prescribed burning, *Amblyomma americanum*, 72
tick control, 72
protein composition, *Ctenocephalides felis*, 265
larval diets, 265
pupae, blow flies, 757
cocoon, 272
Ctenocephalides felis,

272
forensic, 757
raccoons, ectoparasites, 915
opossums, 915
rapid cold hardening, cold shock, 671
diapause, 671
rearing, *Culicoides variipennis*, 175
nematodes, 175
recaptures, *Aedes melanimon*, 607
Aedes vexans, 607
reinfestation, ectoparasite, 257
population, 257
relative humidity, *Ixodes scapularis*, 310
ticks, 310
repellent, *Culex pipiens*, 17
Eutrombicula hirsti, 628
mosquitoes, 505
neem oil, 505
Saudi Arabia, 17
Trombiculidae, 628
reproduction, *Aedes albopictus*, 554
autogeny, 554
Opisocrostis bruneri, 105
Spermophilus franklinii, 105
reservoirs, *Ixodes ricinus*, 880
Lyme borreliosis, 880
respiration, *Amblyomma hebraeum*, 30
tick, 30
Rickettsia, Japanese spotted fever, 183
tick, 183
Rickettsia tsutsugamushi, *Leptotrombidium fletcheri*, 691
Leptotrombidium pallidum, 212
polymerase chain reaction, 691
scrub typhus, 225
Trombiculidae, 225
vertical transmission, 212
risk tick attachment, livestock, 291
pasture, 291
Ross River virus, *Aedes aegypti*, 123
body size, 123
saliva, hematophagy, 747
hemostasis, 747
salivarectomy, *Aedes aegypti*, 923
microfilariae, 923
salivary glands, *Culicoides variipennis*, 898
sexual dimorphism, 898
Salmonella transmission, *Alphitobius diaperinus*, 369
chicken, 369
sand flies, blood feeding, 890
Phlebotomus, 890
sand fly, sticky trap, 388
vehicle-mounted net, 388
Saudi Arabia, *Culex pipiens*, 17
repellents, 17
scanning electron microscopy, eggs, 813, 855
mosquitoes, 855
Siphonaptera, 813
scrub typhus, *Rickettsia tsutsugamushi*, 225
Trombiculidae, 225
seasonal abundance, *Leptotrombidium scutellare*, 844
Tullgren funnel method, 844
seasonal dynamics, *Lutzomyia shannoni*, 850
vesicular stomatitis virus, 850
Senegal, *Aedes*, 623
Dengue 2, 623
serotonin, *Aedes triseriatus*, 600
blood feeding, 600
sexual dimorphism, *Culicoides variipennis*, 898
salivary glands, 898
silicone membrane, diluting bovine blood, 868
horn fly, 868
Simuliidae, bovine *Onchocerca*, 404
hosts, 566
sugar feeding, 566
transmission, 404
Simulium, anticoagulant, 908
black fly, 908
Simulium yahense, biting behavior, 217
Onchocerca volvulus, 217
Siphonaptera, eggs, 813
new species, 887
scanning electron microscopy, 813
Spain, 887
skin, *Argas*, 202
fetal bovine serum, 202
Solenopsis invicta, *Aedes albopictus*, 770
blow flies, 171
egg predation, 770
forensic entomology, 171
Spain, new species, 887
Siphonaptera, 887
spatial pattern, *Anopheles freeborni*, 545
Culex tarsalis, 545
Spermophilus franklinii, *Opisocrostis bruneri*, 105
reproduction, 105
Sri Lanka, irrigation, 516
mosquito breeding, 516
statistical models, diapause, 278
eggs, 278
sticky trap, sand fly, 388
vehicle-mounted net, 388
sugar feeding, *Aedes aegypti*, 611
blood feeding, 611
hosts, 566

Simuliidae, 566
surveillance, *Aedes*, 920
attractants, 645
Culicoides, 645
oviposition, 920
survivorship, *Anopheles pseudopunctipennis*, 340
gonotrophic cycle, 340
susceptibility, *Aedes mediovittatus*, 442
Anopheles albimanus, 400
Brugia spp., 442
Plasmodium vivax, 400
Sweden, hosts, 240
Ixodidea, 240
Tagetes minuta, adulticide, 833
larvicide, 833
tannin, parasitism, 159
treehole mosquito, 159
taxonomy, Macronyssidae, 315
Nycteronyssus desmodus, 315
Taylor's power law, *Macrocheles muscaedomesticae*, 732
Musca domestica, 732
temperature, immature development, 168
Ixodes scapularis, 178
Lyme disease, 178
parasarcophaga (Liopygia) ruficornis, 168
Texas, *Amblyomma americanum*, 297
Borrelia, 297
Thomomydoecus, *Geomydoecus*, 450
Mallphaga, 450
tick, *Amblyomma hebraeum*, 30
cuticulogenesis, 479
ecdysteroids, 479
Japanese spotted fever, 183
respiration, 30
Rickettsia, 183
tick control, *Amblyomma americanum*, 72
prescribed burning, 72
tick eradication, *Amblyomma variegatum*, 490
Herpestes auropunctatus, 490
ticks, arbovirus transmission, 1
arboviruses, 1
Ixodes scapularis, 310
Kansas, 500
mammals, 500
relative humidity, 310
Toxorhynchites h. haemorrhoidalis, breeding sites, 186
population dynamics, 186
transmission, bovine *Onchocerca*, 404
Simuliidae, 404
transoothecal transmission, *Blattella germanica*, 127
entomopathogenic nematodes, 127
transovarial transmission, *Borrelia burgdorferi*, 763
Ixodes ricinus, 763
transposable element, population genetics, 10
vector control, 10
traps, baits, 828
flies, 828
treehole mosquito, parasitism, 159
tannin, 159
Trombiculidae, *Eutrombicula hirsti*, 628
repellents, 628
Rickettsia tsutsugamushi, 225
scrub typhus, 225
Tullgren funnel method, *Leptotrombidium scutellare*, 844
seasonal abundance, 844
vector, bluetongue, 382
Culicoides, 382
vector biology, malaria, 663
Plasmodium vivax, 663
vector competence, *Aedes albopictus*, 287
eastern equine encephalitis virus, 287
Langat virus, 148
Ornithodoros sonrai, 148
vector control, population genetics, 10
transposable element, 10
vehicle-mounted net, sand fly, 388
sticky trap, 388
vertical transmission, *Leptotrombidium pallidum*, 212
Rickettsia tsutsugamushi, 212
vesicular stomatitis virus, Costa Rica, 912
Lutzomyia, 912
Lutzomyia shannoni, 850
seasonal dynamics, 850
virus transmission, African swine fever virus, 373
Ornithodoros (P.) marocanus, 373
West Nile virus, Bagaza virus, 934
Culicidae, 934